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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|-----------------------|------------------|
| 09/904,246 | 07/12/2001 | PonnuSamy Palanisamy | INTL-0581-US (P11590) | 2112 |
| 7590 | 11/12/2003 | | EXAMINER | LIANG, REGINA |
| Timothy N. Trop TROP, PRUNER & HU, P.C. 8554 KATY FWY, STE. 100 HOUSTON, TX 77024-1805 | | | ART UNIT | PAPER NUMBER |
| | | | 2674 | |
| DATE MAILED: 11/12/2003 | | | | |

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Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|------------------------|-----------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 09/904,246 | PALANISAMY, PONNUSAMY | |
| | Examiner | Art Unit | |
| | Regina Liang | 2674 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 20 October 2003.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-10 is/are pending in the application.
 - 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-10 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
 - a) The translation of the foreign language provisional application has been received.
- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

| | |
|--|--|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ . |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ . | 6) <input type="checkbox"/> Other: _____ . |

DETAILED ACTION

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 103

2. Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oka et al (US. PAT. NO. 6,265,986 hereinafter Oka) in view of Wachtler et al (US. PAT. NO. 6,274,391 hereinafter Wachtler).

As to claim 1, Fig. 1-2 of Oka discloses a display comprising a circuit (driving circuit part 23), a display panel (1) electrically coupled to the circuit board in face-to-face abutment substantially along a plane, an electrical connection including a first contact (driving device-side electrode terminals 22) on the circuit, a second contact (display device-side electrode terminals 13) on the display panel. Oka does not disclose the electrical connection including a conductor coupling the first and second contacts and extending generally along the plane. However, Figs. 6 and 7 of Wachtler teaches an electrical connection between a semiconductor device and the printed circuit board including a first contact (pad) on circuit board, a second contact (pad 20) on the semiconductor device, and a conductor (solder ball 22) coupling the first and second contacts and extending generally along the plane (col. 7, line 66 to col. 8, line 4) to provide direct electrical and mechanical attachment means to other system hardware (e.g., col. 6, lines 57-60). Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the electrical connection of Oka to have a first and second contacts and a conductor as taught by Wachtler so as to provide direct electrical and mechanical attachment

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means to the display device for the elimination of wire bonds or TAB attachment solder joints to result in a higher packaged device reliability and potentially lower cost because of reduction in manufacturing and assembly process steps.

As to claims 2, 3, Wachtler teaches the electrical connection is a surface mount connection including solder balls (22) and the solder balls couple to the contact pads (20) on one of the display panel or circuit boards.

As to claim 4, col. 6, line 60 to col. 7, line 28 of Oka teaches the display panel including column electrodes (see Figs. 5, 6, substrate lines 33 or 34 on substrate 31 or 32) and a conductor including a metallization coupled to the second contact (13) on the display panel, and extending to a third contact (a conductor onto the through-holes which contacts a column electrode.

As to claim 5, Oka teaches the column electrode is formed at least in part of ITO (col. 5, lines 43-48).

3. Claims 6, 7, 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oka and Wachtler as applied to claims 5 and 1 above, and further in view of Kawano et al (US. Pub. No. 2002/0054037 hereinafter Kawano).

As to claim 6, Oka as modified by Wachtler does not disclose the display including a plurality of redundant third contacts to the column electrode. However, Kawano teaches the display panel including a plurality of redundant wires goes through the contact holes (42) to contacts the column electrodes (see Figs. 1-3 and page 4, section [0059]). Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the display panel of Oka as modified by Wachtler to include a plurality of redundant third contacts to

the column electrode as taught by Kawano so as to prevent short-circuiting between pixel electrodes.

As to claim 7, Figs. 11(A) to 11(c) of Oka teaches a plurality of second contacts aligned in a column parallel to the column electrode.

As to claim 10, Kawano teaches the contact pads (41) being placed in the pixel area and being aligned in the space between two adjacent column electrode (signal lines), extending generally parallel to the length of the column electrodes.

4. Claims 8, 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oka, Wachtler and Kawano as applied to claim 7 above, and further in view of Kimura et al (US. PAT. NO. 5,253,091 hereinafter Kimura).

As to claim 8, Oka as modified by Wachtler and Kawano does not disclose providing contacts to the column electrodes at every other pixel. However, Figs. 4, 6-8 of Kimura teaches pixels in each column being alternately connected respectively to one column conductor. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Oka as modified by Wachtler and Kawano to have the contacts to column electrodes at every other pixel as taught by Kimura so as to provide a flicker-free display without increasing electric power consumption.

As to claim 9, Fig. 6 of Oka teaches the electrical connections between the row or column lines and the display device-side electrode terminals 13 are connected through the through-holes 38 or 39 formed in the row and column substrates, therefore, Oka teaches the edge of the display panel in Fig. 6 is free of electrical connections.

Response to Arguments

5. Applicant's arguments filed 10/20/03 have been fully considered but they are not persuasive.

Applicant's remarks regarding Wachtler are not persuasive. The reference numeral 32 shown in Fig. 2 of applicant's application is not a conductor as claimed; therefore applicant's remarks are not persuasive. As disclosed in the specification, the numeral 32 is a column line contact, and as evidenced by claim 2 of applicant's application, the conductor as claimed is solder balls (14) which are shown in Fig. 1 of applicant's application, and see page 4 lines 16-24 for example. Figs. 6 and 7 of Wachtler teach a conductor (solder balls 22) for coupling a first contact (pad) on a circuit board and a second contact (pad 20) on the semiconductor device and the solder balls are provided and extended along the plane between the circuit board and the semiconductor device. Therefore, the combination of Oka and Wachtler teaches the claim limitation as set forth in the rejection above.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

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will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Regina Liang whose telephone number is (703) 305-4719. The examiner can normally be reached on Monday-Friday from 9AM to 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Hjerpe, can be reached on (703) 305-4709. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.



REGINA LIANG
PRIMARY EXAMINER
ART UNIT 2674

RL

11/10/03